Listing of the Claims

1-29 (previously cancelled)

30. (Currently amended) A process for making a prosthesis, including:

providing a plurality of elongate filaments comprising a bioabsorbable material selected from the group consisting of: polydioxanone, polycaprolactone, polygluconate, polylactic acid-polyethylene oxide copolymers, modified cellulose, collagen, poly(hydroxybutyrate), polyanhydride, polyphosphoester, poly(amino acids), poly-L-lactide, poly-D-lactide, polyglycolide, poly(alpha-hydroxy acid) and combinations thereof;

braiding the filaments <u>at a braid angle of from about 120 degrees to about 150 degrees</u> on a first mandrel having a first diameter to form a tubular, radially compressible prosthesis structure;

disposing the prosthesis structure on a second mandrel having a second diameter less than the first diameter; and

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while the prosthesis structure is so disposed, annealing the prosthesis structure at a temperature between a glass-transition temperature of the bioabsorbable material and a melting temperature of the bioabsorbable material, to form an annealed prosthesis structure having ~~an~~ <u>the</u> annealed diameter D when in a free state, less than an initial diameter of the prosthesis structure before said annealing, the annealed prosthesis structure further being radially compressible to reduced diameters less than the annealed diameter D and radially self-expandable from the reduced diameters.

31. (Previously added) The process of claim 30 wherein:

the bioabsorbable material is selected from the group consisting of poly-L-lactide, poly-D-lactide, polyglycolide, and their combinations.

32. (Previously added) The process of claim 30 wherein:

the first diameter is in the range of 3-30 mm, and the second diameter is in the range of 0.2-10 mm.

33. (Cancelled)

34. (Previously added) The process of claim 30 wherein:

said annealing is performed for a time period between about five minutes and about two hours.

35. (Previously added) The process of claim 34 wherein:

said time period is between about 10 minutes and about 20 minutes.

36. (Previously added) The process of claim 30 wherein:

said annealing is performed at an annealing temperature in the range of 60-180 degrees C.

37. (Previously added) The process of claim 36 wherein:

the annealing temperature is in the range of 130-150 degrees C.

38. (Previously added) The process of claim 30 wherein:

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said annealing further includes selecting the annealed diameter D based on a predetermined radially outward force to be provided by the annealed prosthesis structure when radially compressed to a predetermined fraction of the annealed diameter D.

39. (Previously added) The process of claim 38 further including:

braiding first and second tubular test structures substantially similar to the unannealed prosthesis structure on the first mandrel;

annealing the first and second tubular test structures on respective first and second test mandrels having different diameters, to form respective first and second annealed test structures having different annealed diameters D_1 and D_2;

loading the first annealed test structure, radially compressed, into a delivery system, deploying the first annealed test structure from the delivery system, then measuring a radially outward force exerted by the deployed first test structure when radially constrained to a predetermined fraction of annealed diameter D_1, thereby to obtain a first radial force value;

loading the second annealed test structure, radially compressed, into the delivery system, deploying the second annealed test structure from the delivery system, then measuring a radially outward force exerted by the deployed second test structure when radially constrained to said

predetermined fraction of annealed diameter D_2, thereby to obtain a second radial force value; and

using the first and second annealed diameters D_1 and D_2 and the first and second radial force values to compute and thereby select an annealed diameter D corresponding to the predetermined radially outward force.

40. (Previously added) The process of claim 39 wherein:

said using the first and second annealed diameters and radial force values comprises deriving from said annealed diameters and the radial force values a linear equation relating annealed diameters to the radial force values corresponding to the radial force exerted by tubular test structures having the annealed diameters when radially compressed to said predetermined fraction of the annealed diameters.

41. (Previously added) The process of claim 40 wherein:

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said predetermined fraction of the annealed diameters is one-half, and the linear equation relating the annealed diameters D to the corresponding radial force values RF is:

$$RF = -15D + 491 \pm 20.$$

42. (Previously added) For prosthesis structures of the type having elongated bioabsorbable filaments braided on a first mandrel and then annealed on a second mandrel to form annealed tubular structures having annealed diameters when in a free state, radially compressible to reduced diameters less than their annealed diameters, and radially self-expandable from the reduced diameters; a process for selecting an annealed diameter based on a predetermined radially outward force to be provided by a selected annealed tubular structure when radially compressed to a predetermined fraction of the annealed diameter, said process including:

providing first and second prosthesis structures having a first diameter and being of the type formed by braiding bioabsorbable filaments on a first mandrel;

annealing the first prosthesis structure on a first test mandrel to form a first annealed test structure having an annealed diameter D_1 less than the first diameter;

annealing the second prosthesis structure on a second test mandrel different in diameter from the first test mandrel, to form a second annealed test structure having an annealed diameter D_2 less than the first diameter and different from annealed diameter D_1;

radially compressing the first annealed test structure to a reduced diameter D_3 less than diameters D_1 and D_2, allowing the first test structure to radially self-expand to a predetermined fraction of annealed diameter D_1, then measuring a radially outward force exerted by the first test structure when at the predetermined fraction of annealed diameter D_1 to obtain a first radial force value;

radially compressing the second annealed test structure to said diameter D_3, allowing the second test structure to self-expand to said predetermined fraction of annealed diameter D_2, then measuring a radially outward force exerted by the second test structure when at the predetermined fraction of annealed diameter D_2 to obtain a second radial force value; and

C2 using the first and second annealed diameters D_1 and D_2 and the first and second radial force values to compute and thereby select an annealed diameter D corresponding to a predetermined radially outward force.

43. (Previously added) The process of claim 42 wherein:

said using the first and second annealed diameters and radial force values comprises deriving from said annealed diameters and the radial force values a linear equation relating annealed diameters to the radial force values corresponding to the radial force exerted by tubular test structures having the annealed diameters when radially compressed to said predetermined fraction of the annealed diameters.

44. (Previously added) The process of claim 43 wherein:

the predetermined fraction of the annealed diameters is one-half, and the linear equation relating and annealed diameters D to the corresponding radial force values RF is:

$$RF = -15D + 491 \pm 20.$$

45. (Currently amended) A process for making a prosthesis, including:

braiding a plurality of elongate bioabsorable filaments on a first mandrel having a first diameter to form a tubular, radially compressible prosthesis structure;

~~disposing the prosthesis structure on~~ selecting a second mandrel having a second diameter less than the first diameter for annealing the prosthesis structure at an annealed diameter D based on a predetermined radially outward force to be exerted by the annealed prosthesis structure when radially compressed to a predetermined fraction of the annealed diameter D; and

while the prosthesis structure is so disposed, annealing the prosthesis structure at a temperature between a glass transition temperature of the bioabsorable material and a melting temperature of the bioabsorable material, to form an annealed prosthesis structure having ~~an~~ the annealed diameter D when in a free state less than an initial diameter of the prosthesis structure before said annealing, the annealed prosthesis structure further being radially compressible to reduced diameters less than the annealed diameter D and radially self-expandable from the reduced diameters.

46. (Currently amended) The process of claim 45 wherein:

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~~The~~ the elongate bioabsorable filaments comprise a material selected from the group consisting of: polydioxanone, polycaprolactone, polygluconate, polylactic acid-polyethylene oxide copolymers, modified cellulose, collagen, poly(hydroxybutyrate), polyanhydride, polyphosphoester, poly(amino acids), poly-L-lactide, poly-D-lactide, polyglycolide, poly(alpha-hydroxy acid) and combinations thereof.

47. (Previously added) The process of claim 45 wherein:

said annealing is performed at annealing temperatures within the range of 60 degrees C. to 180 degrees C.

48. (Previously added) The process of claim 45 wherein:

said annealing is performed for a time period between about five minutes and about two hours.

49. (Cancelled)

50. (New) A process for making a prosthesis, including:

providing a plurality of elongate filaments comprising a bioabsorbable material selected from the group consisting of: polydioxanone, polycaprolactone, polygluconate, polylactic acid-

polyethylene oxide copolymers, modified cellulose, collagen, poly(hydroxybutyrate), polyanhydride, polyphosphoester, poly(amino acids), poly-L-lactide, poly-D-lactide, polyglycolide, poly(alpha-hydroxy acid) and combinations thereof;

braiding the filaments on a first mandrel having a first diameter to form a tubular, radially compressible prosthesis structure;

disposing the prosthesis structure on a second mandrel having a second diameter less than the first diameter;

selecting an annealed diameter D based on a predetermined radially outward force to be provided by the annealed prosthesis structure when radially compressed to a predetermined fraction of the annealed diameter D; and

while the prosthesis structure is so disposed, annealing the prosthesis structure at a temperature between a glass-transition temperature of the bioabsorbable material and a melting temperature of the bioabsorbable material, to form an annealed prosthesis structure having the annealed diameter D when in a free state, less than an initial diameter of the prosthesis structure before said annealing, the annealed prosthesis structure further being radially compressible to reduced diameters less than the annealed diameter D and radially self-expandable from the reduced diameters.

51. (New) The process of claim 50 wherein:

the bioabsorbable material is selected from the group consisting of poly-L-lactide, poly-D-lactide, polyglycolide, and their combinations.

52. (New) The process of claim 50 wherein:

the first diameter is in the range of 3-30 mm, and the second diameter is in the range of 0.2-10 mm.

53. (New) The process of claim 50 wherein:

said braiding comprises winding the filaments to form a braid angle of from about 120 degrees to about 150 degrees.

54. (New) The process of claim 50 wherein:

said annealing is performed for a time period between about five minutes and about two hours.

55. (New) The process of claim 50 wherein:

said annealing is performed at an annealing temperature in the range of 60-180 degrees C.

56. (New) The process of claim 50 further including:

braiding first and second tubular test structures substantially similar to the unannealed prosthesis structure on the first mandrel;

annealing the first and second tubular test structures on respective first and second test mandrels having different diameters, to form respective first and second annealed test structures having different annealed diameters D_1 and D_2;

loading the first annealed test structure, radially compressed, into a delivery system, deploying the first annealed test structure from the delivery system, then measuring a radially outward force exerted by the deployed first test structure when radially constrained to a predetermined fraction of annealed diameter D_1, thereby to obtain a first radial force value;

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loading the second annealed test structure, radially compressed, into the delivery system, deploying the second annealed test structure from the delivery system, then measuring a radially outward force exerted by the deployed second test structure when radially constrained to said predetermined fraction of annealed diameter D_2, thereby to obtain a second radial force value; and

using the first and second annealed diameters D_1 and D_2 and the first and second radial force values to compute and thereby select an annealed diameter D corresponding to the predetermined radially outward force.

57. (New) The process of claim 56 wherein:

said using the first and second annealed diameters and radial force values comprises deriving from said annealed diameters and the radial force values a linear equation relating annealed diameters to the radial force values corresponding to the radial force exerted by tubular

test structures having the annealed diameters when radially compressed to said predetermined fraction of the annealed diameters.

58. (New) The process of claim 57 wherein:

said predetermined fraction of the annealed diameters is one-half, and the linear equation relating the annealed diameters D to the corresponding radial force values RF is:

$$RF = -15D + 491 \pm 20.$$

59. (New) A prosthesis formed according to a process including:

braiding a plurality of elongate bioabsorable filaments on a first mandrel having a first diameter to form a tubular, radially compressible prosthesis structure;

disposing the prosthesis structure on a second mandrel having a second diameter less than the first diameter; and

while the prosthesis structure is so disposed, annealing the prosthesis structure at a temperature between a glass transition temperature of the bioabsorable material and a melting temperature of the bioabsorable material, to form an annealed prosthesis structure having an annealed diameter D when in a free state less than an initial diameter of the prosthesis structure before said annealing, the annealed prosthesis structure further being radially compressible to reduced diameters less than the annealed diameter D and radially self-expandable from the reduced diameters;

wherein the annealed prosthesis structure consists essentially of the elongate bioabsorbable filaments.

60. (New) The prosthesis of claim 59 wherein:

the elongate bioabsorable filaments comprise a material selected from the group consisting of: polydioxanone, polycaprolactone, polygluconate, polylactic acid-polyethylene oxide copolymers, modified cellulose, collagen, poly(hydroxybutyrate), polyanhydride, polyphosphoester, poly(amino acids), poly-L-lactide, poly-D-lactide, polyglycolide, poly(alpha-hydroxy acid) and combinations thereof.

61. (New) The prosthesis of claim 60 wherein:

the bioabsorbable material is selected from the group consisting of poly-L-lactide, poly-D-lactide, polyglycolide, and their combinations.

62. (New) The prosthesis of claim 59 wherein:

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the first diameter is in the range of 3-30 mm, and the second diameter is in the range of 0.2-10 mm.